

Appl.No. 09/990,965  
Amdt. dated January 31, 2006  
Reply to Office Action of November 01, 2005

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings of claims in the application.

**Listing of Claims:**

- 1        1. (Currently Amended) A transmitter for use in optical communication  
2              system, said transmitter comprising  
3                  a means for generating a stream of RZ optical pulses in which  
4                  alternate ones of such pulses have essentially orthogonal  
5                  polarizations, and  
6                  a means for modulating the phases of said optical pulses as a  
7                  function of input data applied to said transmitter to encode  
8                  thereby encoding said input data onto said stream of RZ optical  
9                  pulses,  
10                wherein said modulating means is a Differential Phase Shift Keying  
11                (DPSK) modulator.
  
- 1        2. (Cancelled) The invention defined in claim 1 wherein said modulating  
2              means is a phase shift keyed (PSK) modulator.
  
- 1        3. (Cancelled) The invention defined in claim 1 wherein said modulating  
2              means is arranged to modulate said optical pulses in accordance with  
3              the differences between successive bits in the said input data.
  
- 1        4. (Currently Amended) A transmitter for use in optical communication  
2              system, said transmitter comprising

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- 3           a means for generating a first and a second stream of RZ optical  
4           pulses in which pulses in said first stream have essentially  
5           orthogonal polarizations with respect to pulses in said second  
6           stream, and  
7           means for modulating the phase of said optical pulses in said first  
8           and second streams as a function of first and second streams of  
9           input data applied to said transmitter, respectively, ~~to encode~~  
10          thereby encoding said first and second streams of RZ optical  
11          pulses, respectively  
12          wherein said modulating means is a Differential Phase Shift Keying  
13          (DPSK) modulator.
- 1       5. (Original) The invention defined in claim 4, wherein the said first and  
2           second stream of optical pulses each have same first wavelength, and  
3           wherein said transmitter further includes a wavelength division  
4           multiplexer for combining the output of the said modulation means with  
5           at least a second modulated optical signal having a wavelength  
6           different from said first wavelength.
- 1       6. (Original) The invention defined in claim 4, wherein said optical pulses  
2           are solitons.
- 1       7. (Currently Amended) An optical communication system arranged to  
2           transmit at least one stream of input data from a transmitter to a remote  
3           receiver, said system comprising  
4           a transmitter for generating a stream of RZ optical pulses in which  
5           alternate ones of such pulses have essentially orthogonal  
6           polarizations, and for modulating the phase of said optical pulses  
7           as a function of said input data applied to said transmitter ~~to~~

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- 8                 encode thereby encoding said input data onto said stream of  
9                 optical pulses, wherein said modulation is in a Differential Phase  
10                 Shift Keying (DPSK) modulation format, and  
11                 an optical communication channel for transmitting the phase  
12                 modulated optical pulses from said transmitter to said remote  
13                 receiver.
- 1         8. (Original) The invention defined in claim 7 wherein said system further  
2                 includes a demodulator for recovering said at least one stream of input  
3                 data from said modulated optical pulses at said remote receiver.
- 1         9. (Currently Amended) A method for transmitting input data using an  
2                 optical communication system, said method comprising the steps of  
3                 generating a stream of RZ optical pulses in which alternate ones of  
4                 such pulses have essentially orthogonal polarizations, and  
5                 modulating the phases of said optical pulses as a function of said  
6                 input data to encode thereby encoding said input data onto said  
7                 stream of RZ optical pulses,  
8                 wherein said modulation is in a Differential Phase Shift Keying  
9                 (DPSK) modulation format.
- 1         10.(Cancelled) The invention defined in claim 9 wherein said modulating  
2                 step includes phase shift keying of said optical pulses in a PSK  
3                 modulator.
- 1         11.(Cancelled) The invention defined in claim 9 wherein said modulating  
2                 step includes modulating said optical pulses in accordance with the  
3                 differences between successive bits in the said input data.

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- 1        12.(Currently Amended) A method for transmitting input data using an  
2        optical communication system, said method comprising the steps of  
3        generating first and second streams of RZ optical pulses in which  
4        pulses in said first stream have essentially orthogonal  
5        polarizations with respect to pulses in said second stream, and  
6        modulating the phase of said optical pulses in said first and second  
7        streams as a function of first and second streams of input data,  
8        respectively, to encode thereby encoding said first and second  
9        streams of input data onto first and second streams of RZ optical  
10      pulses, respectively.  
11        wherein said modulation is in a Differential Phase Shift Keying  
12        (DPSK) modulation format.
- 1        13.(Original) The method defined in claim 12, wherein said first and second  
2        streams of optical pulses each have same first wavelength, and  
3        wherein said method further includes the step of combining, in a  
4        wavelength division multiplexer, the phase modulated optical pulses  
5        generated in said modulation step with at least a second modulated  
6        optical signal having a wavelength different from said first wavelength.
- 1        14. (Original) The invention defined in claim 12 wherein the said optical  
2        pulses are solitons.
- 1        15. (Currently Amended) An optical communication method for transmitting  
2        at least one stream of input data from a transmitter to a remote  
3        receiver, said method comprising steps of:  
4        generating a stream of RZ optical pulses in which alternate ones of  
5        such pulses have essentially orthogonal polarizations, and  
6        modulating the phase of said pulses as a function of said input

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- 7           data applied to said transmitter ~~to encode thereby encoding~~ said  
8           input data into said stream of RZ optical pulses,  
9           wherein said modulation is in a Differential Phase Shift Keying  
10          (DPSK) modulation format, and  
11          transmitting the modulated optical pulses from said transmitter to  
12          said remote receiver via an optical communication channel.
- 1         16. (Original) The invention defined in claim 15 wherein said method  
2           further includes demodulating said modulated pulses received at said  
3           remote receiver to recover said at least one stream of input data.